tions, if any." The object is to prepare a bibliography of contributions to science teaching in the last decade "that will be a working basis for any teacher of science, and especially for any in an institution with limited library facilities." Since reviews of recent publications on science teaching are valuable in making up programmes of study, this bibliography should be an aid in this way, and should encourage the study of the literature of the subject. For convenience and effectiveness in covering the whole field of science teaching, specialists have been appointed to undertake the work in six subdivisions. The federation has already a membership of more than 1600, and is the most representative body of teachers of science in America.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 25.—"Note on the Instability of Tubes subjected to End Pressure, and on the Folds in a Flexible Material." By A. **Mallock**, F.R.S.

When a straight rod is subjected to end compression it is stable for small lateral displacements unless the compressing force exceeds a definite limit, depending on the elastic constants of the material of the rod and its length and cross-section dimensions.

If this limit is exceeded the rod is unstable, and the least departure from straightness grows under the action of the force, the axis of the rod then taking the form of one of the well-known elastic curves, and this is the only form which a solid rod can take in the circumstances.

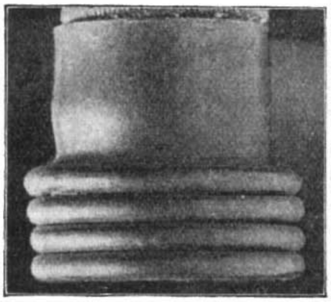

FIG. 1.

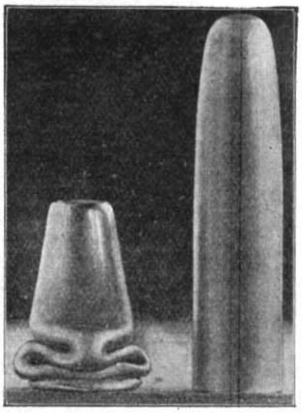

FIG. 2.

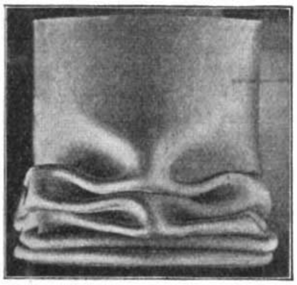

FIG. 3.

With tubes and plates, however, the case is different, for with the tube the ratio of the thickness of the walls to the diameter of the tube has to be considered as well as the ratio of the diameter to the length. Thus a tube the length of which is insufficient to produce instability involving a bending of the axis may become unstable by the crumpling up of the walls, the axis itself remaining straight.

In the case of solid rods the governing condition is the constancy (to the first order) of the length of the axis; with tubes and plates it is the constancy to the same order of the area of the mid-wall surface. Considering the case of tubes in rather more detail, take the axis of the tube as z and let its unstrained radius be r_0.

Under end compression the surface may become unstable by deformation into any of the cylindrical harmonics of the type

$$r = r_0 + a \cos n\theta \cos \frac{2\pi}{\lambda} z,$$

where θ is the angle which r makes with a fixed diameter of the tube and λ the length of the fold parallel to the axis. The order of the harmonic which will naturally be assumed by the deformed tube depends on the ratio (h/r) of the thickness of the walls to the diameter, and will be such that the potential energy of the combined bending and shearing involved may be a maximum.

If the crushing is continued until the tube is greatly reduced in length the folds are seen to develop into the symmetrical shapes shown in the photographs (Figs. 1, 2, 3), for which $n=1$, 2, and 3 respectively. For $n=1$ the folds are circular in plan and independent of θ; when $n=2$ the plan of the folds is a square, and when $n=3$ the plan is hexagonal.

It may be noticed that the instability always shows itself first at one end, and that since the reaction against end pressure decreases as the deformation goes on, each fold is completed in succession, the next not becoming marked until the reaction is increased by the previous fold resting against the last but one.

November 5.—"Note on Tidal Bores." By Lord **Rayleigh**, O.M., Pres.R.S.

It was shown long ago by Airy that when waves advance over shallow water of depth originally uniform, the crests tend to gain upon the hollows (see also "Scientific Papers," vol. i., p. 253, 1899), so that the anterior slopes become steeper and steeper. Ultimately, if the conditions are favourable, there may be formed what is called a *bore*. Ordinary breakers upon a shelving beach are of this character, but the name is usually reserved for tidal bores advancing up rivers or estuaries. Interesting descriptions of some of these are given in Sir G. Darwin's "Tides" (Murray, 1898).

Although the real bore advances up the channel, we may for theoretical purposes "reduce it to rest" by superposing an equal and opposite motion upon the whole water system. We have then merely to investigate the transition from a relatively rapid and shallow stream of depth l and velocity u to a deeper and slower stream of depth l' and velocity u' (Fig. 1). The places where these velocities and depths are reckoned are supposed to be situated on the two sides of the bore, and at such distances from it that the motions are there sensibly uniform. The problem being taken as in two dimensions, two relations may at once be formulated connecting the depths and velocities. By conservation of matter ("continuity") we have

$$lu = l'u'; \tag{1}$$

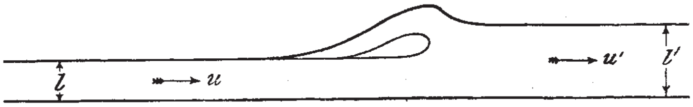

FIG. 1.

and since the mean pressures at the two sections are $\frac{1}{2}gl$, $\frac{1}{2}gl'$, the equation of momentum is

$$lu(u-u') = \tfrac{1}{2}g(l'^2 - l^2); \tag{2}$$

whence

$$u^2 = \tfrac{1}{2}g(l+l').l'/l, \qquad u'^2 = \tfrac{1}{2}g(l+l').l/l'. \tag{3}$$

The loss of energy per unit time at the bore is thus

$$lu\,(\tfrac{1}{2}u^2 + \tfrac{1}{2}gl) - lu\,(\tfrac{1}{2}u'^2 + \tfrac{1}{2}gl') = lu\,.\,g\,(l'-l)\frac{l^2+l'^2}{4ll'}. \tag{4}$$

That there should be a loss of energy constitutes no difficulty, at least in the presence of viscosity; but the impossibility of a gain of energy shows that the motions here contemplated cannot be reversed.

In order to recur to the natural condition of things where the shallow water is at rest, we have to superpose the velocity u taken negatively upon the above motion. The velocity of the bore is then u, and that of the stream above the bore $u-u'$. If l is relatively small, u is much greater than u'.

The reasoning just used is very similar to that applied by Stokes (*Phil. Mag.*, vol. xxxiii., p. 349, 1848) and by Riemann (*Göttingen Abh.*, vol. viii., 1860) to sound waves of expansion moving in one dimension. The matter is discussed in "Theory of Sound," § 253, where it is shown that the discontinuous solution, obtained from the principles of conservation of mass and momentum, violates the condition of energy. When this was pointed out to Stokes by Kelvin, and later by myself (Stokes, "Math. and Phys. Papers," vol. ii., p. 55), he abandoned his solution, which is, however, maintained by a competent German authority (private correspondence). It is clear, at least, that when the motion is such as to involve a gain of energy, the solution cannot be admitted. The opposite case stands upon a different footing, and we may, perhaps, imagine the redundant mechanical energy to be got rid of somehow at the surface of discontinuity. Even then we should have to face the complication entailed by the development of heat. In the present case of liquid, the heat is of little consequence, and since the motion is not entirely in one dimension, we escape the necessity of dealing with a single plane of discontinuity.

November 12.—"Further Observations on Welwitschia." By Dr. H. H. W. **Pearson.** Communicated by Prof. A. C. Seward, F.R.S.

The material which forms the subject of this investigation was collected at Welwitsch and Haikamchab, in Damaraland, in January and February, 1907. Macrospores and embryo-sacs are frequently present in the pith region of the female cone-axis. This confirms the view, already adopted by most authors, that the ovule of Welwitschia is cauline. Sporogenous cells have not been found in a similar position in the male cone.

The female cone and the male flower are probably derived by reduction and specialisation from an amphisporangiate strobilus of a type similar to that of Bennettites.

At the end of the free nuclear division the embryo-sac contains about 1024 nuclei which are equivalent in all visible characters. Cleavage of the cytoplasm occurs, resulting in the septation of the whole sac into compartments. In respect of the morphological character of the endosperm, Gnetum and Welwitschia are widely separated from Ephedra, in which the endosperm is a prothallus of the normal gymnosperm type. It is suggested that the endosperm of the primitive angiosperms was homologous with that of Welwitschia.

It appears that (1) the Gnetum-Welwitschia alliance has its origin in the same stock as the angiosperms, but separated from the angiosperm line before the carpel became the pollen-receiver; (2) Welwitschia is the most specialised living representative of the race to which it belongs.

Zoological Society, December 15.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—Some notes on the muscular and visceral anatomy of the batrachian genus Hemisus, with notes on the lymph hearts of this and other genera: F. E. **Beddard.**—New species of Lacerta from Persia: G. A. **Boulenger.**—Some wart-hog skulls in the British Museum: Dr. Einar **Lönnberg.**—Two Chinese Serow skulls: R. **Lydekker.**—Warning coloration in the musteline Carnivora: R. I. **Pocock.**—A new river-crab of the genus Gecarcinucus, from New Guinea: Dr. W. T. **Calman.**—Mammals, collected in the provinces of Shan-si and Shen-si, northern China, by Mr. M. P. Anderson, for the Duke of Bedford's zoological exploration of eastern Asia: Oldfield **Thomas.** Thirty-three species were included, represented by 335 specimens, presented, as before, to the National Museum by the Duke of Bedford.

Linnean Society, December 17.—Dr. D. H. Scott, F.R.S., president, in the chair.—The Anomura of the Sudanese Red Sea: W. **Riddell.**—Forms of flowers in *Valeriana dioica*: R. P. **Gregory.** In 1877 Hermann Müller described four forms of *Valeriana dioica*, distinguished from one another by the size of the flower and by the relative development of the male and female reproductive organs. The phenomenon appears to be very similar to that which was described by Darwin in *Rhamnus catharticus*. It has been found that the individuals of *Valeriana dioica* may be conveniently arranged in four groups, which are distinguished as, respectively, "female," "hermaphrodite," "long-styled male," and "short-styled male"; but while the central types of each group are readily distinguishable, it must be distinctly recognised that they are connected by a series of intermediate forms, and that there is no discontinuity between successive groups. The precise structure of the flowers of each plant varies considerably, as regards the relative development of the reproductive organs, with the age of the flower examined; but in addition to this there is, in some cases, a very wide range of variation in this respect, quite independent of the age of the flower.—Études sur les Cirrhipèdes du Musée de Cambridge: Prof. **Gruvel.**—The Rhynchota obtained on the *Sealark* Expedition: W. L. **Distant.** The author stated that the collection made by Mr. Gardiner in the Seychelles comprises forty species, viz. twenty-eight species of Heteroptera and twelve of Homoptera. Walker was the first to write on the Heteroptera of these islands, and in 1872 he described three species collected by Dr. Perceval Wright, one of which was found by Mr. Gardiner. In 1893 Bergroth and Reuter worked out the collections made by M. Ch. Alluaud and Père Philibert so far as the Heteroptera was concerned, and were able to enumerate thirty-seven species.

Geological Society, December 16.—Prof. W. J. Sollas, F.R.S., president, in the chair.—The igneous and associated sedimentary rocks of the Tourmakeady district (County Mayo): C. I. **Gardiner** and Prof. Sidney H. **Reynolds,** with a palæontological appendix by F. R. C. **Reed.** The succession of the Ordovician rocks of the district appears to be as follows:—? Bala beds; Llandeilo beds: (*c*) Shangort beds; (*b*) Tourmakeady beds; (*a*) red felsite or rhyolite; Arenig beds—Mount Partry beds: (*d*) variable tuffs, grits, and cherts; (*c*) coarse quartzose and felspathic grits; (*b*) grits, graptolitic black slates, and radiolarian cherts; (*a*) coarse conglomerates. A series of graptolites from the Mount Partry beds prove to be of Upper Arenig age—about the zone of *Didymograptus hirundo*. The puzzling beds of the district are those of Llandeilo age. Although the limestones (Tourmakeady beds) occur in the main as disrupted blocks in the Shangort beds, the fossils indicate that there is little difference in the age of these deposits; probably, after the deposition of the limestone, but during the prevalence of the same faunal types as those of that deposit, the limestone was broken up by volcanic explosions, and its fragments were deposited as the peculiar limestone-breccias. The intrusive rocks are in the main felsites with quartz-crystals, and often contain augite. Interesting intrusions of olivine-dolerite, hornblende-lamprophyre, and fine-grained oligoclase-bearing rocks are scattered throughout the district. The appendix embodies a description of new species of brachiopods and trilobites.

PARIS.

Academy of Sciences, December 14.—M. Bouchard in the chair.—The approximate calculation of inequalities of a high order: Maurice **Hamy.** A calculation to the second degree of approximation of the disturbance of one planet by another.—Contribution to the study of *Haemogregarina lacertae* of Danilewsky and Chalachnikow: A. **Laveran** and A. **Pettit.** A detailed account of the appearances of this parasite in various stages of development, with nine illustrations.—Observations concerning the direct dehydration of certain alcohols: Louis **Henry.** In an earlier paper it has been shown that dimethyl-isopropyl-carbinol, heated with acetic anhydride and a few drops of sulphuric acid, gives, not the acetate, but a mixture of the hydrocarbons tetramethyl-ethylene and isopropyl-methyl-ethylene. In this reaction the acetic anhydride was regarded as the true dehydrating agent, but in the present paper this view is shown to be incorrect. In the absence of the sulphuric acid the acetate is alone formed, and it is the presence of the very small amount of sulphuric acid which determines the formation of the ethylenic hydrocarbons.—Physical observations of the comet 1908*c*, made at the Observatory of Lyons: J. **Guillaume.** A detailed account of the changes of form undergone by the comet as observed between October 24 and November 28.—Observations of the Morehouse comet, 1908*c*, made with the Brünner-Henry equatorial of the Observatory of Toulouse: MM. **Saint-Blancat** and **Rossard.** Two tables giving the results of observations of the positions of the comet and of the comparison stars between October 2 and 14.—Geodesic lines: Jules **Drach.**—The number of double integrals of the second species of certain algebraic surfaces: L. **Remy.**—Description of the Voisin aëroplane used by MM. Farman and Delagrange: G. **Voisin.**—The compensation of compasses of great magnetic moment: Louis **Dunoyer.**—The magnetic dichroism of calcite and of dolomite in mixed liquids: Georges **Meslin.**—The influence of pressure on the phenomena of ionisation; curves of current and curves with constant field: E. **Rothé.**—Rotatory power at low temperatures and the connection between the absorption of light and rotatory polarisation in crystals of cinnabar: Jean **Becquerel.**—The theory of absorption in gases: L. **Bloch.** A modification of Lorentz's theory on the basis of Walker's hypotheses. The formulæ arrived at still await experimental verification.—The magnetism of the rare earths: B. **Urbain** and G. **Jantsch.** For groups of the rare earths, the salts of which possess nearly identical solubilities, and the atomic weights of which are nearly the same, the coefficients of magnetisation vary considerably, and hence may serve to determine the composition of mixtures which scarcely admit of analysis by other methods. Results are given of measurements of oxides of the type X_2O_3, in which X may be neodymium, samarium, europium, gadolinium, terbium, or dysprosium.—The variations of the composition of the colloids which are formed in a solution of ferric chloride according to the conditions of hydrolysis: L. **Michel.**—Remarks on the magnetic properties of the simple bodies: P. **Pascal.** The following law is enunciated:—the atomic susceptibility is an exponential function of the atomic weight for diamagnetic bodies of the same valency and of analogous chemical properties. Some of the experimental data in support of this are given.—The preparation of thorium chloride: Camille **Matignon.** The oxide is heated in a mixture of chlorine and the vapour of chloride of sulphur, the chloride being formed at a temperature sufficiently low to permit the use of glass tubes in the place of porcelain tubes required by other methods. Thorium chloride, if quite pure, is not so hygroscopic as has been stated by previous workers.—Studies on aluminium. The analysis of aluminium powder: E. **Kohn-Abrest.** Two methods of analysis are suggested, and the results given of their application to a sample of aluminium powder.—The dissociation of sodium bicarbonate: M. **Soury.**—The atomic weight of silver: Louis **Dubreuil.** A reply to some recent objections of A. Leduc.—The true atomic weight of silver: G. D. **Hinrichs.** The value 108 is maintained to be the true experimental atomic weight of silver.—The action of sulphur chloride (S_2Cl_2) on metals and metalloids: Paul **Nicolardot.** In all the actions described S_2Cl_2 acts like HCl, and not as a chlorinating agent.—The action of heat on iodic anhydride: Marcel **Guichard.** Iodine pentoxide is unchanged by heating until a temperature of 300° is reached. Above this temperature iodine and oxygen are given off. The non-decomposed portion becomes chestnut coloured. Comparative analyses of the white and brown anhydride gave similar results, all agreeing well with the composition of I_2O_5. The brown colour appears to be due to minute traces of iodine retained by the undecomposed anhydride, and no proof of the formation of a lower oxide could be obtained.—Research on the occluded gases contained in a complex brass containing manganese and filled with cavities: G. **Guillemin** and B. **Delachanal.**—The waxes of the Coniferæ: a new group of natural principles: J. **Bougault** and L. **Bourdier.**—Syntheses of derivatives of camphenylone: J. **Bouveault** and G. **Blanc.**—The action of sulphuric acid on aldehyde and paraldehyde: the preparation of crotonic aldehyde: Marcel **Delépine.** Acetaldehyde, carried as vapour in a current of air into pure sulphuric acid maintained at 10° C. to 15° C., is absorbed, and distillation of the diluted acid gives a 30 per cent. yield of crotonaldehyde, together with a new polymeride, $C_8H_{12}O_2$. The substitution of paraldehyde for aldehyde improves the yield.—The action of acids on diiodo-α-methylsparteine: Amand **Valeur.**—The action of ferments at varying temperatures: C. **Gerber.**—Attempts at the molecular analysis of protoplasmides: A. **Étard** and A. **Vila.** Anhydrous methyl alcohol is suggested as a suitable means of separation.—The influence of some mineral salts, especially stannous chloride, upon fermentation: G. **Gimel.** Two types of yeast (the elliptic wine yeast of Jacquemin and a distillery yeast of the Frohberg type) have been submitted to the action of salts of various metals. The results with tin and bismuth salts are the most striking. The addition of 0·01 per cent. of stannous chloride increases the yield of alcohol by 4 per cent., a property possessing obvious industrial applications.—The influence of light on the development of fruits and seeds: W. **Lubimenko.**—Contribution to the cytological study of the Endomyces: *Saccharomycopsis capsularis* and *Endomyces fibuliger*: A. **Guilliermond.**—The production of a new variety of spinach, *Spinacia oleracea*, var. *polygama*: M. **Blaringhem.**—The structure of the ciliary retina: J. **Mawas.**—An Acrasped without medusa: *Taeniolhydra Roscoffensis*: Edgard **Hérouard.**—The rhythmic appearance and stages in the experimental inversion of the chlorotropism of the Paguræ: Romuald **Minkiewicz.**—Studies on the cancer of mice: the histophysiology of certain cells of the conjunctival stroma of tumour B: L. **Cuénot** and L. **Mercier.**—The treatment of deep-seated tumours by a method allowing the action of radiant matter to proceed at close quarters with the tissues without altering the teguments: E. de Bourgade **la Dardye.** Zinc sulphide is injected, and this rendered phosphorescent by the X-rays. Cases are cited in which the method has been used with advantage.—The treatment of arterial hypertension by the high-frequency current: G. **Lemoine.** Good results have been obtained in five cases, full details of each being given.—The radiographic study of the articulation of the elbow and knee in a girl three and a half years of age: Maxime **Ménard.**—The fossil man found at Chapelle-aux-Saints (Corrèze): Marcellin **Boule.**—The white rhinoceros, re-found in the Soudan, is the unicorn of ancient times: E. L. **Trouessart.**—The Haleciidæ, Campanulariidæ, and Sertulariidæ of the *Challenger* collection: Armand **Billard.**—The appearance of males and hermaphrodites in parthenogenetic reproduction: J. **Panțel** and R. **de Sinéty.**—Microseisms of long duration: José Comas **Solá.**—The Phoridæ and Leptidæ of Baltic amber: Fernand **Meunier.**—The influence of deflation on the constitution of the ocean floor: J. **Thoulet.**

December 21.—M. Émile Picard in the chair.—Remarks on Fredholm's equation: H. **Poincaré.**—The action of lines of electric energy on hailstorms: J. **Violle.** In a previous note the author described the ravages caused by a hailstorm, the path of which followed exactly a wire carrying current at a high potential. Such a wire gives off torrents of ions carrying large electric charges, the effects of which are exactly comparable with those produced by the hail cannon. Although one electric transmission line is insufficient to protect a district, several might have a protective effect.—The mode of action of electricity in electric parthenogenesis: Yves **Delage.** It has been found that the condenser used in the experiments previously described permitted a leakage of current, the resistance being of the order of 20 megohms. It is conceivable that the acid and alkali produced by this current from the salt in the solution might account for the observed phenomena, which would thus reduce to a case of chemical parthenogenesis.—The forms of endogenous multiplication of *Haemogregarina lacertae*: A. **Laveran** and A. **Pettit.** A detailed description with diagrams.—Observations of the sun, made at the Observatory of Lyons during the third quarter of 1908: J. **Guillaume.** Observations were taken on sixty-seven days, and the results are summarised in three tables giving the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—The cyclid of Lie: A. **Demoulin.**—The singularities of analytical functions: Paul **Dienes.**—Multiform integrals of differential equations of the first order: Pierre **Boutroux.**—The condition that seven right lines should be situated on a surface of the fourth degree: E. **Traynard.**—The Thomson formula, $T=2\pi\sqrt{CL}$, relating to the discharge of a condenser: André **Léauté.** In the case of coils carrying several layers of wire, the capacity is no longer negligible, and the Thomson formula requires modification. The theory of this case is developed in the present paper, and it is shown that the current due to the discharge of a condenser through a coil with two layers may be considered as formed by the superposition of an infinite number of sinusoidal currents, the amplitude of which tends towards zero with the period. This theory explains the presence of striæ in induction sparks.—The radiation and temperature of the flame of the Bunsen burner: E. **Bauer.** The temperature of the Bunsen flame found by these measurements is 1760° ± 50, and is near the 1870° found by M. Féry, on the assumption that the emission of the D line is a purely thermal phenomenon.—Supertension and viscosity: Ch. **Marie.**—The synthesis of ammonia by means of peat: H. **Woltereck.**—The inconveniences of potassium bichromate when used as a preservative for milk samples intended for analysis: A. **Monvoisin.** The addition of 0·1 per cent. of potassium bichromate to milk samples intended for analysis is at present compulsory in France. This addition prevents the detection of added formaldehyde or hydrogen peroxide, and also renders it impossible to state whether the milk has been heated or not.—Contribution to the study of the humic matter in peat wool: L. **Roger** and E. **Vulquin.**—The reciprocal influence of respiratory phenomena and the behaviour in certain Actinia: Henri **Piéron.**—The development and affinities of *Sorosphaera Veronicae*: R. **Maire** and A. **Tison.**—Carpocyphosis: the normal anatomy and pathology of the lower radio-cubital articulation: R. **Robinson.**—The discovery of a human skeleton at Chapelle-aux-Saints (Corrèze): A. and J. **Bouyssonie** and L. **Bardon.** Details of the discovery and removal of this fossil skeleton, described by M. Boule in the *Comptes rendus* of last week. Both above and around the skeleton were many broken bones, as well as tools of flint and quartz. The animal remains included the reindeer, horse, and a large ruminant.—The anatomy of the appendicular organs of the female reproductive apparatus of *Periplaneta orientalis*: L. **Bordas.**—Experimental researches on the evolutive mutations of certain crustaceans: Edmond **Bordage.**—The upper limit of the proportion of the encephalus with respect to the weight of the body in birds: Louis **Lapicque.**—*Syllis vivipara* and the problem of its sexuality: Aug. **Michel.**—Filtration of the X-rays by aluminium: H. **Guilleminot.**—Geological structure in the Salzkammergut in the neighbourhood of Ischl and Aussee: Émile **Haug.**—The hydrography and climate of Algeria since the Oligocene epoch: J. **Savornin.**—The substratum of the *nappe du charriage* in the Peloponnesus: Ph. **Négris.**—The supposed submarine spring of the Port-Miou (Bouches-du-Rhône): E. A. **Martel.** This spring, the existence of which has been described in various works for the last 200 years, does not appear to exist.—The variations of climate: Henryk **Arctowski.**—The seismic disturbances of December 12 and 18, 1908: Alfred **Angot.**—The traces of a positive movement along the western coast of Corsica, and its function in the morphology and evolution of the coast-line: Paul **Castelnau.**—The telluric currents between stations of different altitude: Bernard **Brunhes.**

NEW SOUTH WALES.

Royal Society, November 4.—Mr. W. M. Hamlet, president, in the chair.—Note on pucherite from West Australia: E. **Griffiths.** The physical properties and composition of the mineral agree with those recorded in Dana's "System of Mineralogy" for the mineral pucherite. This is believed to be the first recorded occurrence of pucherite in Australia.

DIARY OF SOCIETIES.

MONDAY, JANUARY 4.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—Cinchonamine and Certain Other Rare Alkaloids: B. F. Howard and O. Chick.—Reactions between Dyes and Fibres; W. P. Dreaper and A. Wilson.—A Physico-chemical Method for Comparing the Antiseptic Value of Disinfectants: Drs. S. B. Schryver and R. Lessing.

VICTORIA INSTITUTE, at 4.30.—Life in a Country Town of Lycaonia—(Conditions of Christian Life under the Eastern Empire): Sir W. M. Ramsay.

THURSDAY, JANUARY 7.

RÖNTGEN SOCIETY, at 8.15.—A Description of Three Sub-standards of Radio-activity recently prepared for the Röntgen Society: C. E. S. Phillips.—A New Localising Apparatus designed by Staff-Surgeon Dr. Gillett: H. C. Head.

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